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The influence of short-term variations in atmospheric forcing on the large-scale structure of oceanographic fields / Resnyanskii Yu.D., Zelenko A.A., Stepanov V.N., Strukov B.S. // Hydrometeorological Research and Forecasting, 2023, no. 3 (389), pp. 75-92.

The dependence of the large-scale structure of oceanographic fields on short-term variations in atmospheric forcing (AF) at the ocean surface has been studied. Estimates of this dependence were obtained by comparing the results of two numerical experiments with the NEMO model in the ORCA1 configuration used as a computational core in the data assimilation system at the Hydrometeorological Center of Russia. The experiments similar in all other respects differed only in the discreteness of the AF data: 3–24 hours in the main experiment and 1 month in the experiment with time-averaged AF. Large-scale characteristics were compared: kinetic energy averaged over large regions, Atlantic Meridional Overturning Circulation, meridional heat transport, mixed layer depth, sea ice volume. It is shown that neglecting high-frequency AF variability can significantly distort the long-term evolution of oceanographic fields reproduced by ocean models and thereby affect the quality of model forecasts.

Keywords: oceanographic fields, large-scale structure, NEMO model, atmospheric forcing, short-term variations

Fig. 3. Ref. 48.